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ABSTRACT

Theory and research on techniques for second language classrooms are reviewed in five areas: the scaffolding technique; questioning techniques; cooperative learning; techniques for promoting student interaction with text (reading instruction); and error correction. It is concluded that: (1) while there is some conflicting evidence, the majority of studies reviewed support the notion that reciprocal teaching improves reading and listening skills and fosters positive student attitudes toward reading; (2) studies of questioning show that teacher questions promote classroom interaction when open-ended, challenging, and interpretational, increasing teacher wait time after questions improves the quality and quantity of interaction, teacher encouragement and immediacy increase student questions, and the number of student questions in student/student interaction is much greater than in teacher/student interaction; (3) allowing students to interact freely in cooperative learning without close monitoring improves language skills; (4) heterogeneous grouping promotes interaction of low-ability students; (5) task differences influences interaction among group members; (6) interaction with prior knowledge and student-generated questions improve reading comprehension; and (7) error correction, even computer-generated, improves learning. Contains 103 references. (MSE)

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Review of recent studies dealing with techniques for classroom interaction

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Recent years have seen a substantial increase in the theoretical and empirical literature of classroom interaction. Techniques for classroom interaction have been dealt with by many theorists and researchers with varied points of view and methodology. The purpose of this paper is to review this literature over the past ten years and offer conclusions for teaching practice.

Defining classroom interaction

As defined by Celce-Murcia (1989: 25) the term classroom interaction is "a system of giving and receiving information." According to Malamah-Thomas (1987: 7), classroom interaction "means acting reciprocally." She maintains that, "The teacher acts upon the class, but the class reaction subsequently modifies his next action, and so on." van Lier (1988: 93) has divided classroom interaction into two types: 1) social interaction, and 2) cognitive interaction. He maintains that both types mediate between input and intake and the social type involves interaction with people whereas the cognitive one involves interaction with knowledge systems such as prior knowledge.

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Techniques for classroom interaction

(1) The Scaffolding technique

The instructor/student interaction unlike student/student interaction is based on superior knowledge and authority. That is, the instructor as the language expert knows more than the student, and is thus in a superior position (Prabu 1987). This superiority, however, does not prohibit effective interaction (Comeau 1987). Instructors who wish to interact with their students can use the scaffolding technique. This technique includes activities such as reciprocal teaching, provision of contextual cues, and use of half-finished examples. These activities are temporary supports that help the teacher to interact with his students (Rosenshine and Guenther 1992). Scarcella and Oxford (1992) also claim that such activities should be gradually withdrawn as students become more independent.

Research on scaffolds

A review of research on scaffolds has revealed that recent research studies done in this area are limited to investigating the effects of teacher/student reciprocal teaching on language achievement and proficiency. These studies showed that reciprocal teaching: 1) enhanced the lecture comprehension and comprehension monitoring skills of college students (Spivey 1995), 2) improved reading comprehension with educationally at-risk pupils (Dao 1994), and 3) fostered students' attitudes toward reading (Karlonis 1995). However, Bradford (1992) reported that poor readers who received reciprocal teaching did not improve more than those students who continued in regular basal reading instruction.

(2) The questioning technique

Questioning has been one of the most common techniques for classroom interaction (Andersen and Nussbaum 1990). Both teacher and student questions constitute most of the classroom interaction. As Daly et al. (1994: 27) point out, "In classrooms, questioning on the part of teacher and students takes up a

significant portion of the day. Across all grade levels, approximately 70% of average school day interaction is occupied with this activity. . ."

Chaudron (1988) claims that teachers' questions may be either helpful or inhibiting of interaction. To encourage student interaction, Udall and Daniels (1991) suggest that teachers' questions should be open-ended and the wait time should be at least ten seconds. Carlsen (1991) suggests that teachers should ask challenging questions rather than rote memory ones to encourage students to take part in classroom interaction.

Nunan (1989) notes that, "in contrast with interactions in the world outside, classroom interaction is characterized by the use of display questions to the almost total exclusion of referential questions" (p. 29). According to van Lier (1988: 222), the distinction between instructional questions and conversational (non-instructional) ones is not their referential or display nature, but rather their eliciting nature. He wrote:

> Such [display] questions have the professed aim of providing comprehensible input, and of encouraging 'early production'. I suggest that, by and large, what gives such question series their instructional, typically L2-classroom character is not so much that they are display rather than referential, but that they are made with the aim of eliciting language from the learners (p. 222).

Research on classroom questions

There has been much research on classroom questions over the past ten years. The issues which were investigated in this area include teacher questions, teacher wait time, and student questions. The writer found that only two studies addressed teacher questions in recent years. One of them was conducted by Albert (1987) who found that most active student

participation occurred in lessons where: 1) teacher's questions were personal or interpretational (rather than factual), and 2) the teacher did not evaluate student responses. In the other study, Dillon (1988) found that questions took up 67 % of teachers' turns at talk.

The second issue centered on teacher wait time after questions. Rowe (1987) found that the average teacher waited one second. In his review of the studies dealing with wait time, Tobin (1987) concluded that increasing teacher wait time had a number of effects including: a decrease in the amount of teacher talk, an increase in the amount of student utterances, fewer low cognitive-level questions, and more high level questions.

The third issue dealt with student questions from a variety of perspectives. Aitken and Neer (1991) found that encouragement from teachers was related to increases in student questions. Daly et al. (1994) reported that: 1) there was a significant relationship between question-asking comfort and grades in reading, 2) question-asking comfort was positively related to family income, socioeconomic status, English language proficiency, self-esteem and locus of control, and 3) males felt more comfortable in asking questions than females. Darling (1989) found that questions were often utilized as verbal strategies by students to signal a lack of comprehension or an attempt to gain peer or teacher assistance. El-Sakran and Ankit (1995) found that Arab EFL students resorted to wh-questions when they asked for details, clarification, and repetition. Good et al. (1987) found that kindergarten females asked two or one-half times fewer questions than males. As they grew older, females gradually increased their frequency of question-asking each year until seventh grade. However, after this stage, females questions fell below those of males. This decline was explained by the investigators as follows:

Numerous studies show that adolescent females are

> generally reluctant to compete in the classroom, apparently because they want to appear less aggressive than male students, or they are hesitant to ask questions because of their concern about how teachers and peers will perceive their questions (e. g., its appropriateness) (p. 194).

In the same study, Good et al. (1987) also reported that, across grade levels, elementary students who were low achievers avoided question-asking in the classroom. This passivity, according to the investigators, was caused as well as reinforced by certain teacher behaviors. They wrote:

> For example, many teachers call on students perceived to be low achievers less often, wait less time for them to respond, give them answers rather than try to help them improve their responses when they answer incorrectly, are less likely to praise their success, and are more likely to criticize their failures. Because low achievers are less likely to answer correctly and because their mistakes occur in public, they have to deal with levels of ambiguity and risk when they respond. Under the circumstances, a good strategy for them is to remain passive—not to volunteer and not to respond when called on—and possibly to ask fewer questions and approach the teacher less often (p. 183).

H. Abdel Samie and M. Abdel Samie (1996) found that the number of student questions in student/student interaction was much greater than in teacher/student interaction. Finally, West (1991, cited in Daly et al. 1994) reported that high levels of teacher immediacy elicited more questions from students than low teacher immediacy.

(3) The cooperative learning technique

The cooperative learning technique refers to a set of instructional activities in which students work in learning groups or dyads. For group or peer involvement in language learning, some language teaching methodologists suggest the use of problem solving to promote interaction and divergent thinking (e. g., King 1989, Palincsar and Brown 1988, Sadow 1987). Others suggest the use of drama (improvisation, role-play, simulation) and language games for group or peer involvement in classroom interaction (e. g., Chang 1990, Crookall and Oxford 1990, Kim 1995, McDonough and Shaw 1993, Sharim-Paz 1993).

Benefits of cooperative learning

Student/student interaction has a valuable role to play in second/foreign language learning in complement with teacher/student interaction. It provides students with a different context in which they can use the new language. Ford (1991: 45) outlines the theoretical advantages of cooperative learning in the following way:

> Cooperative learning provides students with greater opportunities to: 1) interact with each other, 2) negotiate for meaning, 3) work in a variety of projects that are of interest to them, 4) participate in real-world communicative activities more frequently than in traditional teacher-fronted classrooms...

Christison (1990: 9) agrees with Ford when she says:

> Through cooperative learning techniques students can become real partners in the learning enterprise. Since most consequential problems are solved via collaboration, students who learn to work together in an educational setting are better prepared to meet life's obligations. Through cooperative learning techniques learners are asked to do things in the EFL classroom that they are asked to do in real life—take charge of

and responsibility for their own learning.

Additional advantages of cooperation in second/foreign language learning include more student talk, more varied talk, more relaxed atmosphere, greater motivation, and increased amount of comprehensible input (Olsen and Kagan 1992). Oxford (1990) also points to other advantages for cooperative learning. Among them are higher self-esteem and confidence, decreased prejudice, and increased respect for others.

Interaction and group composition

Some cooperative learning advocates (e. g., Slavin 1990) suggest that students should be grouped heterogeneously. That is, group composition should include students with diverse experiences. The rationale for heterogeneous grouping is based on both affective and cognitive considerations. According to Johnson and Johnson (1989), students encounter wider diversity in heterogeneous groups. Thus, heterogeneous grouping is more likely to improve interpersonal attraction among group members. It can help to dismantle social barriers and misconceptions between the handicapped and non-handicapped, males and females, and the socially advantaged and disadvantaged. Jacobs and Hall (1994) also note that heterogeneous ability grouping benefits both high- and low-ability students. Less able students receive more instructional support from their partners than from the classroom teacher. Concurrently, more able students may also benefit cognitively from explaining lessons to their partners and from the opportunity to practice cooperative social skills. On the other hand, some theorists claim that heterogeneous groups do not challenge high-ability students and less able students benefit at the expense of their more able partners (e. g., Mills and Durden 1992, Robinson 1990).

Webb (1989) claims that the effectiveness of cooperative learning is attributed to interaction among group members. To

promote interaction among group members, Hooper et al. (1989) suggest increasing individual accountability wherein each group member must demonstrate mastery of the content embedded in the instruction. Contrasted with deriving a team response where less able students might simply defer to those who are more able, or more able students may attempt to dominate, individual accountability may promote qualitatively and quantitatively superior interaction. Supporting Hooper et al., Jacobs (1987) suggests that "when students write group compositions, making each group member responsible for one part of the task can help avoid loafing by less active or less able students" (p. 331). Additionally, some advocates of cooperative learning propose training to facilitate interaction among students. They claim that without training, interaction will be ineffective and students will imitate familiar behaviours which are not related to effective interaction (e. g., Dalton 1990, King 1989, Palincsar et al. 1990).

Research on cooperative learning

The effects of group ability composition on learning efficiency and interaction were examined in two recent studies. Hooper and Hannafin (1988) found that heterogeneous grouping increased the achievement of low-ability students by approximately 50% compared to their homogeneously grouped peers. In contrast, homogeneous grouping increased the achievement of high-ability students by approximately 12% compared to their heterogeneously grouped counterparts. In another study, the same investigators (Hooper and Hannafin 1991) investigated the effects of cooperative group composition and student ability on interaction, instructional efficiency, and achievement during computer-based instruction. The results showed that: 1) low-ability students interacted more in heterogeneous than in homogeneous groups, 2) high-ability students completed the instruction more efficiently in homogeneous than heterogeneous groups, and 3) cooperation was significantly related to achievement for heterogeneous

ability groups, but not for either homogeneous high- or low-ability students.

A number of studies examined gender differences in classroom interaction. Dalton et al. (1989) found that the cooperative treatment was more favourable by low-ability females than by low-ability males. Carrier and Sales (1987) found that female pairs verbalized the most while male pairs verbalized the least, and male-female pairs demonstrated the most off-task behaviour. On the other hand, Mavarech et al. (1987) and El-Koumy (1996) found no significant differences in performance between males and females in the cooperative learning condition.

Furthermore, many researchers highlighted the value of cooperative learning in the area of language skills. They found that cooperative learning improved: 1) vocabulary and reading comprehension (Radebaugh and Kazemek 1989, Rapp 1992, Uttero 1988), 2) attitudes of poor readers toward reading (Madden 1988), oral language skills (Bejarano 1987, Rosen 1987), 3) fluency in writing (Davis and Omberg 1987, Stevens et al. 1987, Williams 1991), and 4) spelling (Koury 1990, Rangel 1988).

The previously-mentioned results led many researchers to examine the effect of cooperative learning with media originally designed for individual learning on achievement and motivation. Some researchers reported that cooperation at the computer produced positive results (Dalton et al. 1989, Hooper et al. 1993), while others did not find a significant effect for cooperative CAI (Carrier and Sales 1987, Mevarech et al. 1987). Similarly, some researchers reported that cooperative learning influenced motivation and achievement when students used the medium of television (Adams et al. 1990), while others indicated that subjects who worked alone were better and expressed more continuing motivation than those who worked cooperatively with the medium of television (Klein et al. 1994).

Learning tasks and peer interaction

The tasks assigned to students influence their interaction with each other (van Lier 1988). Palincsar et al. (1990) suggest that open-ended problems provide greater opportunities for collaboration than do closed problems. The issue of learning tasks and peer interaction was investigated by a number of researchers in the past ten years. Brown (1991) investigated the effect of task difference on interaction among adult English teacher trainees in Egypt. The factors studied were the degree of 'tightness' or 'looseness' of the tasks, the degree of 'openness' or 'closedness' of the tasks, and the degree to which the tasks could be described as 'procedural', meaning that they led to discussions about what decisions to make, or 'interpretive', meaning that they led the participants to interpret data according to their understanding and experience. The researcher found no significant differences in the level of modification occurring in the three task types but found significant differences in the levels of hypothesizing and instructional input between the interpretive task and the task requiring decisions about procedures. Hertz-Lazarowitz (1989) found that the kind of task (process, means, outcome) influenced peer interaction. She wrote:

> When students cooperated about means or product (low cooperative task), most of their interactions within that category were at the informative ("what") level, less concerned the applicative ("how") or evaluative ("why") levels. When students cooperated about process, in contrast, most of their interaction was at the applicative level (p. 117).

In conclusion, the researcher recommended three ways to design tasks that promote peer interaction. She wrote:

> First, the teacher can include elements that have no clear solutions or answers. For example, in the task of generating uses of the olive tree, the additional

> instruction to rank order uses by importance changed student interaction from merely combining their individual lists to rich discussions comparing the uses, justifying students' selections and reaching consensus (Hertz-Lazarowitz and Fuchs 1987). Second, students might be asked to generate useful and creative "next steps" in their work. For example, after a reading task in which students discussed the vocabulary and content in a newspaper editorial about year-round schools, students suggested ideas for group work, including rewriting the editorial in a simpler way, writing and sending a response to the editorial to the newspaper, and writing their own editorial on another topic, that would likely require much high-level discussion. (Lazarowitz 1988). Third, students should be allowed to interact freely without close monitoring by the teacher. By attempting to control interaction, teachers may unwittingly interfere with the discussion that may emerge when students compare their answers and work (Lazarowitz 1988) (p. 118).

Pica and Doughty (1988) compared: 1) the amount of modified conversational interaction generated in teacher-fronted activity during optional vs. required information exchange tasks, and 2) the amount of modified conversational interaction generated during teacher-fronted vs. group interaction on the required information exchange task alone. The findings of the study showed that: 1) the amount of conversational modification obtained during optional and required information exchange tasks was significantly more during the latter task type for the group participation pattern only, and 2) there was a 21% difference in the proportions of conversational modifications during the teacher-fronted situation compared with the group format.

Saunders (1989) investigated the relationship between the task and the interaction that evolved among peers engaged in collaborative activities. Five collaborative writing activities, representing different combinations of four tasks and four interactive structures, were examined with respect to their influence on patterns of peer interaction and learning outcomes. The results showed that tasks influenced patterns of peer interaction as well as learning outcomes.

(4) Techniques for interaction with the text

Recently, cognitively based views of reading have emphasized the interactive nature of reading (e. g., Barnett 1989, Carrell 1987, Esky 1989, Esky and Grabe 1989). Some language teaching methodologists (e. g., Gillespi 1990, Papalia 1987) have suggested many techniques to increase students interaction with the text. Among them are:

(1) Techniques for interaction between reader and text

(a) Asking students to draw a picture to illustrate what was read.

(b) Asking students to summarize a reading passage with a commentary.

(c) Asking students to correct sentences that contain wrong information while reading.

(d) Asking students to make up an ending to a story after reading it.

(e) Asking students to generate questions about what is being read.

(2) Techniques for interaction between reader and reader over the text

(a) Giving students two sentences with a gap between them and a choice of two or three sentences to fill the gap. The students discuss which sentence is the best one to fill the gap and why.

(b) Asking students to read the first paragraph of a passage and giving them a choice of three sentences that might start

the second paragraph. The students discuss which sentence would fit the content, logic and organization of the passage and what the second paragraph might contain.

(c) Asking students to work together to paraphrase a reading passage.

(d) Asking students to discuss viewpoints represented by persons in the text.

More recently, some language teaching methodologists have suggested the use of computer to provide students with numerous opportunities for interaction with the text. As R. Schreck and J. Schreck (1991: 474) have noted:

> As learners read through textual passages, the computer provides opportunities for numerous interactions, each incorporating constructive feedback. This allows learners to continuously monitor and adjust their own understandings of passages while they are reading.

Barakat (1993: 126-127) has expressed the same idea in the following way:

> CAI provides interactive learning with students constantly engaged in responding to the learning task rather than merely observing it. This inter-activity stimulates creative language learning and provides the language teachers and learners with an environment or stimulus for communication and interaction. . . . Furthermore, computers can be connected to other computers to form communication network. Computer-based telecommunication capabilities provide ample opportunities for second language learners to practice the TL. Such capability makes it possible for learners of a second language to interact with native speakers thousands of miles away.

Research on reading as an interactive process

In many studies, researchers showed that interaction with prior knowledge increased reading comprehension (Martin 1991, Murry 1991, Shim 1988). A second body of research showed that interaction with computer-based texts improved spelling (Weber 1990), and reading comprehension (Foley 1995, Herfkens 1990, Varner-Quick 1994). A third body of research found that student-generated questions increased reading comprehension (Hafner 1991, Milne 1990, Zaher 1988). However, Sabater (1987) found that the use of self-generated questions alone did not increase reading comprehension but training in question generation did.

(5) Error correction techniques

Error correction is an important aspect of classroom interaction which received special attention in the past ten years. Dissatisfaction with the results of using the correction technique in which the teacher provides corrections in the student finished product only, led some language teaching methodologists to suggest that the teacher can intervene at various points in the process of writing to correct errors (e. g., Mahili 1994, Singh and Sarker 1994, Wheeler 1994). Such a technique, as their advocates believe, transforms a writing task from just doing the assignment for the teacher to an interaction between the student and the teacher. Another alternative technique is providing students with guidance and asking them to correct each other's compositions. The advantages of this technique are mentioned by Zikri (1993) as follows: 1) stimulating critical thinking, 2) creating a collaborative learning atmosphere full of interaction, 3) developing students' sense of responsibility and confidence, and 4) saving teacher's time.

Research on error correction

Error correction lies at the core of research on

teacher/student and student/student interaction. Some researchers investigated the effect of correction vs. no correction on language accuracy and proficiency. Herron and Tomasello (1988) found that the students in the feedback (correction) condition learned the structures better than the students in the modeling (no correction) condition. As an implication for teaching, the researchers recommended that teachers "should correct student errors as constantly as possible" (p. 918). In another study conducted by the same researchers (Tomasello and Herron 1988), the results indicated that inducing grammatical errors and correcting them was more effective than direct presentation of rules and exceptions. On the other hand, Roig-Torres (1992) found that error correction had no effect on students' oral proficiency. As a result of the study, the researcher concluded that the findings "seem to be consistent with Krashen and Terrell's beliefs that intensive correction in the classroom does not increase accuracy..." (p. v).

The effect of peer vs. teacher correction is another issue which was investigated in this area. Richer (1993) investigated the effect of peer directed vs. teacher based correction on first year college students' writing proficiency. The results showed that there was a significant difference in writing proficiency in favour of the peer correction group. However, Tolleffson and Gilbert (1987) found that although the peer correction group showed more positive attitudes toward writing, their writing fluency did not increase.

Some investigators also examined the effect of computer-generated feedback on the development of the language skills. Jinkerson (1995) found that students in the two spell checker groups (working either with or without a human peer) outperformed the students with no technology partner. Kelly (1995) found that electronic spelling checkers improved the writing fluency, spelling and reading comprehension of

heterogeneous grouped students. On the other hand, Russell (1992) reported that computer-generated feedback was as effective as handwritten instructor feedback.

Summary and conclusions

From the research reviewed in this paper, the following conclusions may be drawn: (1) Although there is conflicting evidence, the majority of studies (75%) support the notion that reciprocal teaching improves reading and listening skills and fosters students' attitudes towards reading. (2) Studies in the area of classroom questions show that: (a) teacher questions promote classroom interaction on condition that these questions should be open-ended, challenging and interpretational, (b) increasing teacher wait time after questions improves the quantity and quality of classroom interaction, (c) teacher encouragement and immediacy increase student questions, and (d) the number of student questions in student/student interaction is much greater than in teacher/student interaction. (3) All studies (100%) related to cooperative learning show that allowing students to interact freely without close monitoring by the teacher improves their language skills. (4) All studies (100%) related to group composition and interaction show that heterogeneous grouping promotes the interaction of low-ability students more than homogeneous grouping. (5) Research appears to be controversial on the effects of cooperative learning with media originally designed for individual learning. (6) Research appears to be controversial on the effects of gender on classroom interaction. (7) All studies (100%) relevant to learning tasks and peer interaction show that task difference influences interaction among group members. (8) Research in the area of reading as an interactive process show that: (a) interaction with prior knowledge always improves reading comprehension, and (b) student-generated questions usually increase reading comprehension. (9) Two studies (66.6%) out of three show that error correction improves language accuracy and/or proficiency

more than no correction. (10) Research appears to be controversial on the effects of peer correction versus teacher correction on writing proficiency. (11) Two studies (66.6%) out of three indicate that computer-generated correction improves spelling and reading comprehension.

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